<u>CLAIMS:</u>

What is claimed is:

1.   A method comprising:

measuring one or more performance characteristics associated with each of at least a

subset of a plurality of targets in a wireless communication system; and

selectively building one or more clusters, each cluster including one or more target(s) and

which share wireless communication channel(s), based at least in part on the performance

characteristics.

2.   A method according to claim 1, wherein the performance characteristics include one or

more of a signal to interference and noise ratio (SINR), a signal to noise ratio (SNR) a received

signal strength indication (RSSI), a bit-error rate (BER) and/or a frame-error rate (FER).

3.   A method according to claim 1, wherein each cluster is comprised of up to M targets and

each communication channel accommodates up to N targets, the method of building one or more

cluster(s) further comprising:

assigning at least a subset of up to N targets to a first communication channel resource;

and

selectively assigning subset(s) of a remaining (M-N) targets to share additional

communication channel resource(s) within the cluster.

4.   A method according to claim 1, wherein measuring the performance characteristics

comprises:

3   initializing K sets of weights;

4   estimating the signal to interference and noise ratio (SINR) for each target for each of the

5   K weights; and

6   selecting one of the K weights for each of the targets that maximizes each targets SINR,

7   to produce K clusters of targets based, at least in part, on each target's SINR.

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1   5.   A method according to claim 4, further comprising:

2   identifying a target within each of the cluster(s) with a lowest SINR; and

3   generating a new weight for each of the cluster(s) based, at least in part, on the SINR of

    the identified target within the cluster(s).

6.   A method according to claim 5, wherein the new weight is a least-squares weight

associated with the identified target.

7.   A method according to claim 5, further comprising:

    estimating the performance characteristics of each of the target(s) within each of the

3   cluster(s) using the generated new weight for each of the cluster(s); and

4   regrouping targets according to the weights that provide the best SINR for each of the

5   targets.

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1   8.   A method according to claim 7, further comprising:

2 iteratively repeating the steps of identifying, generating, estimating and regrouping until

3 no significant improvement in the estimated performance characteristics of the target(s) is

4 identified.

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1 9. A method according to claim 8, further comprising:

2   selectively monitoring at least a subset of target(s) for changing performance

3 characteristics; and

4   iteratively repeating the steps of identifying, generating, estimating and regrouping until

5 no significant improvement in the estimated performance characteristics of the target(s) is

6 identified.

10. A storage medium comprising content which, when executed by an accessing computing

appliance, implements a method according to claim 1.

11. A communication station comprising:

   wireless communication resources; and

3   a communication agent, coupled with the wireless communication resources, to populate

4 cluster(s) with one or more target(s) based, at least in part, on one or more estimated

5 performance characteristics associated with the targets, and to develop a weighting value for at

6 least a subset of the populated clusters to generate a transmission beam to target(s) within the

7 cluster(s) based, at least in part, on the developed weighting value.

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12. A communication station according to claim 11, wherein the wireless communication resources include at least a transmitter subsystem.

13. A communication station according to claim 11, the communication agent comprising:

a clustering engine, to measure one or more performance characteristics associated for each of at least a subset of a plurality of targets in a wireless communication system, and to selectively build one or more clusters, each cluster including one or more target(s) and sharing a wireless communication channel, based at least in part on the performance characteristics.

14. A communication station according to claim 13, wherein the clustering engine initializes K sets of weights, estimates the signal to interference and noise ratio (SINR) for each target for each of the K weights, and selects one of the K weights for each of the targets that maximizes each targets SINR, to produce K clusters of targets based, at least in part, on each targets SINR.

15. A communication station according to claim 14, further comprising the clustering engine identifies a target within each of the cluster with a lowest SINR, and dynamically generates a new set of weights based, at least in part, on the SINR of the identified target.

16. A communication station according to claim 15, wherein the clustering engine calculates the new weight as a least-squares weight associated with the identified target.

17. A communication station according to claim 15, wherein the clustering engine estimates the performance characteristics of each of the target(s) within each of the cluster(s) using the

3   generated new weight for each of the cluster(s), and regroups targets in clusters according to the

4   weights that provide the best SINR for each of the targets.

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1   18.   A communication station according to claim 17, wherein the clustering engine iteratively

2   repeats the process until further re-grouping of targets fails to produce a significant improvement

3   in the estimated performance characteristics of the targets.

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1   19.   A transceiver according to claim 18, the communications agent further comprising:

2   a beamforming engine, responsive to the clustering engine, to modify one or more

attributes of a transmission signal to form a beam directed at target(s) within one or more

cluster(s) based, at least in part, on the generated weight value(s) associated with each cluster.

20.   A communication station according to claim 11, further comprising:

        a memory subsystem having stored therein content; and

        control logic, coupled with the memory subsystem, to access and execute at least a subset

of the stored content to implement the communications agent.

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1   21.   In a wireless communication system implementing general packet radio services (GPRS),

2   a method comprising:

3   populating cluster(s) with one or more target(s) based, at least in part, on measured

4   performance characteristics of each of the one or more target(s); and

5   developing a weighting value for at least a subset of the populated clusters to generate a

6   transmission beam to target(s) within the cluster(s) based, at least in part, on the cluster spatial

7   signature.

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1   22.   A method according to claim 21, further comprising:

2   modifying one or more parameters of a wireless communication link signal to form the

3   transmission beam to target(s) within the clusters based, at least in part, on the developed weight

4   values.

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23.   A method according to claim 22, further comprising:

    transmitting the formed transmission beam to an associated one or more cluster(s).

24.   A method according to claim 21, wherein populating cluster(s) comprises:

    measuring one or more performance characteristics associated for each of at least a subset

of a plurality of targets in a wireless communication system; and

    selectively building one or more clusters, each cluster including one or more target(s) and

5   sharing a wireless communication channel, based at least in part on the performance

6   characteristics.

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1   25.   A method according to claim 24, wherein measuring the performance characteristics

2   comprises:

3   initializing K sets of weights;

estimating the signal to interference and noise ratio (SINR) for each target for each of the

K weights; and

selecting one of the K weights for each of the targets that maximizes each targets SINR,

to produce K clusters of targets based, at least in part, on each targets SINR.

26.   A method according to claim 25, further comprising:

identifying a target within each cluster with a lowest SINR; and

generating a new weight for each of the cluster(s) based, at least in part, on the SINR of

the identified target.

27.   A method according to claim 26, wherein the new weight is a least-squares weight

associated with the identified target.

28.   A method according to claim 26, further comprising:

estimating the performance characteristics of each of the target(s) within each of the

cluster(s) using the generated new weight for each of the cluster(s); and

regrouping targets according to the weights that provide the best SINR for each of the

targets.

29.   A method according to claim 28, further comprising:

iteratively repeating the steps of identifying, generating, estimating and regrouping until

no significant improvement in the estimated performance characteristics of the target(s) is

identified.

1   30.   A storage medium comprising content which, when executed by an accessing computing

2   device, causes the device to implement a method according to claim 21.

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